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Chronic Pain in Older Adults: A Controlled Pilot Trial of a Brief Cognitive-Behavioural Group Treatment

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Background: Chronic pain is a common condition among older adults. While cognitive behaviour therapy (CBT) has been tested in numerous studies on adults and children there are fewer studies on older persons. The objective of this study was to investigate the effects of a six-session CBT group treatment for older persons with chronic pain. As a secondary aim we investigated whether treatment credibility was associated with outcome. **Method:** We included 21 persons (mean age = 72.0 years) who were randomly allocated to either a waitlist condition or treatment consisting of applied relaxation, with the addition of problem solving, assertiveness, communication strategies, sleep management, and relapse prevention. **Results:** Few statistically significant effects were found on measures of pain, mood, anxiety, and quality of life; however, a significant treatment effect with a between group effect size of $d = 1.0$ was observed with respect to perceived ability to function despite the discomfort of pain. **Conclusion:** The study provides some preliminary support for the use of group-based CBT with a focus on applied relaxation for older adults with chronic pain.

Keywords: Older adults, chronic pain, applied relaxation, group treatment.

Introduction

Chronic pain is common among older adults and a challenge for health care to manage since medications are not always feasible. Cognitive behaviour therapy (CBT) is an established treatment approach in the management of chronic pain in adults, but the number of CBT studies on the management of chronic pain in older adults is limited. This is in contrast to the

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observation that chronic low back pain is one of the most common, poorly understood, and potentially disabling chronic pain conditions from which older adults suffer. In addition, there have been few attempts to modify CBT for older adults. This may be important as both CBT and the psychological aspects of pain may differ between younger and older adults. There are a few studies on CBT for older adults with chronic pain but they have mixed findings. In this pilot trial we sought to investigate whether a six-session CBT group treatment with an emphasis on applied relaxation would be effective for older adults with chronic pain. Other components addressing communication strategies, assertiveness training, sleep management, and problem solving were also included. The treatment did not focus on traditional cognitive therapy techniques and was delivered by psychologists only (i.e. not multidisciplinary). As a secondary aim, we investigated whether treatment credibility was associated with outcome.

Method

Participants and procedure

Participants were recruited via an advertisement in a local newspaper plus posters at GP practices. A total of 43 persons responded and were phoned for a brief telephone interview. From these, 26 were interviewed in person at the psychology university clinic. We had the following inclusion criteria: age over 65 years, chronic back and/or neck pain with no radiation to arms or legs, pain duration $>$ 6 months, having a medical file at the hospital, being able to walk stairs, and being able to attend group meetings. If the following criteria were found during the interview the participant was excluded: malignant disease, radiating pain, known neurological condition, or previous psychological treatment for pain. A physician screened all medical files before inclusion. Following these procedures and the exclusion of an additional 5 persons due to medical problems or late decline in interest, 21 persons were included in the study. There were 16 females and 5 men. The mean age was 72.0 years ($SD = 4.6$, range 65–82 years) and the average duration of pain was 15.8 years ($SD = 14.5$, range 0.5 to 48 years). All participants reported back pain and/or neck pain, and 17 also reported pain from other sites. Other medical conditions were also reported. In the sample there were 9 participants who lived with a spouse, 2 who lived separately but had a spouse/partner, and 10 who lived alone. When later randomized into treatment and control conditions there were no statistically significant differences with regards to age and pain duration. Two participants in the control group later dropped out due to illness and family problems. All participants randomized to the waitlist control group later received the active treatment. Participants were interviewed using a structured interview and their medical files were checked by a physician. Following inclusion, they were randomized by means of a dice (done by an independent person), which resulted in 11 being allocated to the treatment group and 10 to the control group. The protocol was approved by the medical ethics committee.

Outcome measures

A total of six self-report measures were included to assess outcome and one to assess treatment credibility. Three questionnaires were used to measure pain related problems. These were the Coping Strategies Questionnaire (CSQ; Jensen and Linton, 1993), the Multidimensional Pain Inventory (Bergström, Jensen, Bodin, Linton, Nygren and Carlsson, 1998), and the Pain and

Impairment Relationship Scale (PAIRS; Riley, Ahern and Follick, 1988). We also included two measures of anxiety and depression, the Hospital Anxiety and Depression Scale (HADS; Lisspers, Nygren and Söderman, 1997) and the Anxiety and Sensitivity Index (ASI; Reiss, Petersen, Gurksy and McNally, 1986). The Quality of Life Inventory (QOLI; Frisch, Cornell, Villanueva and Retzlaff, 1992) was used to measure values oriented quality of life (e.g. satisfaction in relation to importance). We also used a pain diary in which pain intensity was rated four times each day on a 0 -100 visual analogue scale (morning, around lunch time, afternoon, and evening). This was done one week pretreatment and one week posttreatment. An index for each week was calculated by summing all ratings and dividing by the total number of ratings for the week. As a process measure we used the treatment credibility scale (Borkovec and Nau, 1972), which was administered during the second group meeting.

Treatment

The group treatment programme was developed for the study and was based on CBT protocols, but adapted for the older population (e.g. less information, written handouts). Treatment was delivered in six weekly group sessions, each lasting 2 hours with a 15 minute break. The treatment was lead by two M.Sc. psychologists, who received supervision by the first author. Each session included homework assignments, feedback, rationale, and written text materials as handouts. Exercises were completed during the sessions. The following treatment components were included: 1) rationale and a CBT model; 2) applied relaxation in five steps; 3) goal formulation; 4) information on exercise, pacing, and planning of activities; 5) sleep management; 6) problem solving; 7) communication strategies; 8) assertiveness; and 9) relapse prevention.

Results

Data were analyzed using 2 × 2 ANOVA, with Bonferroni-corrected post-hoc tests in the case of significant interactions (treatment x time). Means, standard deviations, and *F*-values for the interaction effects are presented in Table 1. As seen in the Table, most interactions were not significant. One exception was the CSQ single item subscale assessing ability to decrease pain. Post-hoc test showed an increase in the treatment group ($p = .01$). The between group Cohen's d effect size was $d = 1.7$. Since section 2 of the MPI-S requires that the participant had a partner, we had a selective dropout on this section and only 8 completed the items. There was, however, an interaction for the subscale assessing punishing responses. Given the small sample size this should be interpreted with caution and post-hoc tests were not significant. For the PAIRS we found a significant interaction, which was partly confirmed by the post-hoc test showing a trend ($p = .08$) for a perceived increase in functional ability despite pain in the treatment group. The between group effect size was $d = 1.0$. A trend indicating an interaction for the QOLI was also found, but there were no significant interactions for the HADS subscales, the ASI, or the pain diary (see Table 1). All analyses were repeated on an intention-to-treat basis, bringing last observation carried forward. In this particular case this meant that the two dropouts in the control group were included in the analyses. This had minor effects on the results, with the exception that the QOLI interaction became significant [$F(1,19) = 4.41$, $p = .05$]. Post-hoc analyses confirmed an increase in the treatment group ($p = .03$) and no change in the control group. The controlled effect size was $d = 0.8$. Finally,

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Table 1. Means (*SD*s) for all measures at pre- and posttreatment. Degrees of freedom and *F*-values for group x time ANOVA interaction effects

Measure	Group	Pre *M* (*SD*)	Post *M* (*SD*)	*df*	*F*-value
CSQ:					
Diverting attention	Treatment	14.7 (7.3)	17.5 (5.0)	(1, 17)	1.72
	Control	14.6 (6.3)	13.8 (6.5)		
Reinterpret pain sensations	Treatment	2.1 (2.3)	3.4 (3.6)	(1, 17)	0.03
	Control	4.5 (5.1)	5.5 (6.4)		
Coping self-statements	Treatment	17.5 (6.8)	18.3 (5.7)	(1, 17)	1.95
	Control	21.3 (8.0)	19.9 (9.0)		
Ignore pain sensations	Treatment	15.5 (7.4)	17.4 (5.7)	(1, 17)	1.88
	Control	12.3 (8.0)	11.0 (6.6)		
Praying or hoping	Treatment	9.1 (7.0)	9.0 (7.8)	(1, 17)	0.00
	Control	8.5 (4.0)	8.5 (5.8)		
Catastrophizing	Treatment	11.7 (8.7)	11.8 (3.1)	(1, 17)	0.54
	Control	15.6 (10.5)	13.6 (10.1)		
Increase activity level	Treatment	17.5 (8.2)	21.6 (6.0)	(1, 17)	1.77
	Control	15.9 (5.3)	17.4 (4.7)		
Control over pain	Treatment	2.7 (0.6)	3.4 (1.0)	(1, 17)	2.13
	Control	3.5 (1.8)	3.4 (1.9)		
Ability to decrease pain	Treatment	3.1 (0.8)	4.0 (0.6)	(1, 17)	12.53**
	Control	3.0 (0.9)	2.4 (1.3)		
MPI:					
Pain severity	Treatment	3.3 (0.6)	3.2 (1.1)	(1, 17)	0.91
	Control	3.0 (1.3)	3.6 (1.4)		
Interference	Treatment	3.5 (1.4)	3.3 (1.3)	(1, 17)	1.80
	Control	3.1 (1.5)	3.5 (1.2)		
Life control	Treatment	3.1 (1.0)	3.7 (1.0)	(1, 17)	2.70
	Control	3.4 (1.4)	3.1 (1.8)		
Affective distress	Treatment	2.8 (0.7)	3.0 (1.1)	(1, 17)	1.06
	Control	3.0 (1.1)	2.7 (1.0)		
Support	Treatment	2.9 (1.8)	3.5 (1.8)	(1, 17)	0.55
	Control	2.2 (1.8)	2.3 (2.3)		
Punishing responses	Treatment	2.3 (1.7)	0.8 (0.9)	(1, 6)	7.72*
	Control	0.3 (0.2)	1.1 (0.8)		
Solicitous Responses	Treatment	2.8 (1.6)	2.6 (1.3)	(1, 6)	0.03
	Control	2.5 (1.2)	2.5 (1.6)		
Distracting Responses	Treatment	3.3 (1.6)	2.4 (2.0)	(1, 6)	1.00
	Control	1.9 (2.0)	1.6 (1.6)		
General activity level	Treatment	2.9 (1.0)	3.0 (0.6)	(1, 17)	1.84
	Control	3.3 (0.9)	2.9 (0.8)		
PAIRS:	Treatment	58.0 (11.8)	52.5 (9.2)	(1, 17)	4.27*
	Control	57.8 (13.4)	62.3 (10.4)		
HADS:					
Anxiety	Treatment	8.2 (3.9)	5.6 (3.3)	(1, 17)	0.41
	Control	10.0 (5.3)	8.5 (6.0)		
Depression	Treatment	4.6 (2.8)	3.4 (1.9)	(1, 17)	1.35
	Control	5.6 (4.8)	5.9 (5.0)		

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Table 1. Continued

Measure	Group	Pre *M* (*SD*)	Post *M* (*SD*)	*df*	*F*-value
ASI:	Treatment	21.2 (14.9)	19.1 (14.0)	(1, 17)	1.13
	Control	21.3 (14.7)	22.8 (16.0)		
QOLI:	Treatment	2.5 (1.1)	3.3 (0.6)	(1, 17)	3.53#
	Control	2.3 (1.8)	2.3 (1.9)		
Pain diary (0–100)	Treatment	37.9 (9.6)	36.9 (17.9)	(1, 16)	0.16
	Control	33.2 (23.0)	34.6 (22.4)		

CSQ = Coping Strategies Questionnaire (CSQ), MPI = Multidimensional Pain Inventory, PAIRS = Pain Impairment Rating Scale, HADS = Hospital Anxiety and Depression Scale, ASI = Anxiety Sensitivity Scale, QOLI = Quality of Life Inventory #$p<.10$ $^{*}p<.05$ $^{**}p<.01$

we explored if scores on the treatment credibility scale were correlated with the outcome (change scores on the PAIRS and QOLI). Treatment credibility was correlated with outcome on both the PAIRS ($r = 0.76$, $p = .01$) and on the QOLI ($r = -0.67$, $p = .03$), indicating that patients who regarded the treatment as credible improved more.

Discussion

The aim of this pilot randomized trial was to study the effects of a brief group based CBT treatment for older adults with chronic pain. The study was small and hence large effects were required to reach statistical significance. In spite of this, we found treatment effects on one measure of pain disability (PAIRS), with a corresponding large between-group effect size. The single item question dealing with ability to decrease pain was also statistically significant but should be regarded as less reliable than the PAIRS. Overall, effects were too small to be statistically significant, but the tendency in the data indicated that the treatment group benefited from (and were pleased with) the treatment. We found a significant correlation between treatment credibility and change scores on the PAIRS and QOLI, but given the small sample size this must also be interpreted with caution.

There are limitations to this study, the first being the already mentioned small sample size. This was motivated by the pilot nature of this study. Effect sizes for non-significant outcomes were not small (e.g., $d = 0.64$ for diverting attention on the CSQ subscale); but since lack of power makes effect size estimates non-reliable, we refrained from presenting effect sizes for non-significant outcomes. A second limitation concerns the outcome measures; specifically, we included measures of several constructs not obviously related to the treatment components. For example, we added the ASI, which is a measure that has been consistently related to measures of pain distress and also found to respond to CBT in conditions like tinnitus and panic disorder. Measuring anxiety sensitivity may be more justifiable in treatments including exposure, which our treatment did not include. Most of the CSQ and MPI-S subscales did not respond to treatment, nor did we find substantive effects on the HADS and QOLI (except for the latter in the intention-to-treat analysis). A third limitation concerns the contents of the treatments program, in spite of the fact that we made an attempt to adapt the treatment components for use with older adults. A more careful selection process could instead pilot

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treatment components in clinical settings before inclusion in a protocol. A fourth limitation is the lack of follow-up data.

Despite these limitations, our pilot study adds to the literature suggesting that CBT for chronic pain in older adults generally has small effects and that there may be some promise in using applied relaxation as used with adult samples in previous trials conducted in Sweden. The emphasis in our protocol was on applied relaxation. While we included problem solving, assertiveness, communication strategies, sleep management, and relapse prevention, all of these components were presented in a relative brief form in order to make the program less demanding for our participants. Our study was different from many previous CBT studies as we did not include any cognitive restructuring or any strictly operant techniques. It is not possible to ascertain to what degree the adaptations we made in the treatment protocol may have influenced the outcome, but we recommend further studies investigating how treatment programmes should be adapted for older populations.

Moreover, while a waiting-list control group was feasible at this stage it would have been preferable to have a credible control condition that would facilitate interpretation of the role of the specific treatment ingredients. Overall, our impression was that the group format was appropriate for this sample but it may be that individual treatments could have generated a better outcome. Finally, older adults are a heterogeneous group and it is not necessarily the case that our adaptations were needed for all participants.

In conclusion, this pilot randomized trial gives preliminary support for the use of a brief group-based CBT intervention for older adults with chronic pain. It should be followed by larger trials testing if applied relaxation is useful on its own and if tailoring CBT for older adults with chronic pain could be done in a better way.

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